

## WATER MANAGEMENT AND PROTECTION OF HISTORIC GARDENS: THE GIARDINO DELLE CAMELIE IN BOBOLI.

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### Abstract.

The aim of the research is the experimentation and the concrete application of intervention techniques for the management of water in monumental historical parks and gardens, in order to protect and safeguard the safety of the artifacts. The study draws inspiration from a large historical literature concerning the construction techniques declined for the reclaiming and regimentation of water in the land, developed starting from the classic Vitruvian treatises. The conditions of structural degradation faced by the Camellia Garden today are mainly linked to the malfunctioning of the drainage system. To safeguard the safety of the property, an intervention to support and integrate the historical water drainage system has been scheduled. It will allow in the future to improve the flow of water, preventing the onset of deleterious overpressures on the equipment masonry with the activation of dangerous overturning mechanisms that undermine the protection of the building.

The examination of the historiographic documentation available is combined with in situ observation, based on a "quantitative / parametric" as well as qualitative approach, of constructive situations and experiences chronologically coeval with the ones proper of the broad context of Boboli.

The main issue is specifically the restoration and securing of the retaining bastion of the Piazzale della Meridiana and of the underlying Giardino delle Camelie. This project is part of the more general restoration work of the Giardino delle Camelie.

The project contemplates the systematic use of drainage techniques based on the use of "sub-horizontal drain-pipes alongside the original gathering and evacuation complex of the interstitial waters" of the embankments. The results of the research were analyzed and validated through a series of numerical modeling based on the "f.e.m." method which allowed to determine the safety levels in the two "pre" and "post-intervention" conditions and to confirm the need and effectiveness of the solutions adopted.

**Keywords:** *tecniche costruttive, bonifica, regimentazione delle acque, drenaggio dell'acqua, consolidamento strutturale, tubi-dreni sub-orizzontali, acque interstiziali, terrapieni, rilievo, sondaggi, metodo "f.e.m."*.